

Project Fact Sheet

Wind Turbine Technology Development

The Wind Turbine Company

GOALS

- Support and develop new wind turbine technology that targets reducing cost of energy to California ratepayers
- Develop and demonstrate a new, cost-competitive, commercial-scale, 2-bladed downwind turbine design.
- Collaborate with private industry and national researchers to explore new wind technology concepts to improve wind turbine generation reliability



PROJECT DESCRIPTION

In 1998, the Commission and the National Renewable Energy Laboratory (NREL) teamed with the Wind Turbine Company (WTC) to develop the next generation of commercial wind turbines aimed at reducing turbine capital costs.

The first phase of the project is now complete with the development and demonstration of a 250 kilowatt (kW) proof-of-concept (POC) turbine. Installed at NREL's NWTC test facility, the POC has amassed thousands of hours of unattended time and is undergoing continued testing. To achieve cost reduction targets, this turbine incorporates proprietary designs for advanced load mitigation and control techniques. Also the design demonstrates the viability of using a flexible 2-bladed, down wind turbine configuration on commercial scale units for weight saving benefits. The results of POC testing were incorporated into Phase II – the development of a commercial scale EMD 500 kW prototype. The EMD 500 is scalable to 750kW and is undergoing trail tests under Phase II of the project in Lancaster, CA.

The goals Phase II include:

- Design blades to upgrade the capacity of the prototype unit to 750 kW;
- Investigate the use of guyed towers made from commercially available materials to reduce tower costs;
- Investigate improvements in gearbox design to increase reliability;
- Further reduce costs through value engineering;
- Quantify load and load mitigation using the 2-bladed flexible design



BENEFITS TO CALIFORNIA

When successfully completed, this project is expected to produce tangible benefits to California energy users, including:

- Unsubsidized wind generated electricity for 3.5¢/kWh or less;
- Fuel free, clean energy generation;
- Substantial reductions in air emissions due to avoided use of fossil fuels;
- Decreased reliance on imported fuels resulting in increased price stability;
- Creation of new jobs and tax revenues at the local, state and federal levels;
- Re-establishment of the U.S. as a technological and commercial leader in the field of utility scale wind turbines.

FUNDING AMOUNT

Commission, Phase I	\$950,000
Commission, Phase II	\$1.3 million
Total Match	\$16.2 million
Project Total	\$18.4 million

PROJECT STATUS

Ongoing. The project is currently in Phase 2.

FOR MORE INFORMATION

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